

SHORTENING OF THE ROUND LIGAMENTS BY SUBPERITONEAL VENTRO-APONEUROTIC FIXATION.¹

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IN common with other favorite procedures in pelvic and abdominal surgery the operation about to be described for holding the uterus in a forward position attained its present stage of perfection through a process of surgical evolution, in which the ingenuity of Gilliam and Ferguson proved originating forces, while the fertile brain of a Simpson, and the surgical judgment and operative skill of a Montgomery played the parts of modifying factors. Now while the recognition of the operation by the name of its originator, compounded by the names of those who eliminated its original defects and improved and simplified its technic, may be of interest as a matter of surgical history and reflect the glory of those to whom credit is due, it must be admitted, that the practice of thus naming surgical innovations has no value scientifically, and, as many of us know, proves highly confusing to the student, hence the designation of the procedure as indicated by the title of this paper.

Shortening of the round ligaments by subperitoneal ventro-aponeurotic fixation, signifies in a few words the main anatomic and surgical features of a procedure that is again directing the attention of the profession to the feasibility, as well as the advisability, of replacing the retro-deviated uterus in suitable cases by restoring and enhancing the physiologic efficiency of its natural supports.

The principles underlying this comparatively new

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operation have gained in favor with many surgeons and not a few in their eagerness to pose as originators have described devious routes and complicated methods for the accomplishment of practically the same thing—*i.e.*, fixation of the inner third of the round ligaments to one or more of the ventral structures immediately above the pubic bone by subperitoneal transition.

The operation as finally perfected by Professor Montgomery and extensively practiced in the wards of the Jefferson Medical College Hospital for more than two years is simple in detail, and after mastering its technic is as easily and readily done as a ventro-suspension. The abdomen is opened and coexisting complications are dealt with as may be indicated. If the uterus is retrodisplaced and a forward inclination is desired, each round ligament about one-and-a-half inches from its uterine attachment is picked up and temporarily held with catch forceps; a strand of strong cat-gut fifteen to eighteen inches in length is passed beneath each ligament at these points, thus forming loops in which the ligaments rest while the two ends of each strand are secured by hæmostats. The round ligament of one side is next seized with a hæmostat immediately external to the part held by the looped strand, and this is handed to an assistant with instructions to render the distal portion of the ligament with its peritoneal investment tense by traction toward the median line of the abdomen. Both ends of the corresponding looped strand are now drawn through the eye of a Deschamp ligature-carrier. The peritoneum overlying the anterior leaflet of the broad ligament immediately below the hæmostat held by the assistant is picked up with a toothed-forceps and button-holed with a scissors, and through this opening the armed carrier is introduced, passing outward between the folds of the broad ligament following the course of the round ligament. Upon reaching the abdominal wall the tension hæmostat is removed while the point of the carrier is thrust through the abdominal musculature and aponeurosis about three-fourths of an inch above the margin of the pubic

bone and about one-and-a-half inches from the median line. The ends of the strand are now released from the eye of the carrier external to the aponeurosis and the carrier itself is withdrawn. Traction upon the strand breaks the peritoneal investment of the ligament held by its loop and drags it to the under surface of the aponeurosis through which it is teased by enlarging the perforation with the spreading points of a scissors. The round ligament of the opposite side is next dealt with in a like manner. The exposed portion of each round ligament overlying the abdominal aponeurosis is now under the control of the will of the operator for shortening or lengthening either its proximal or distal portion, the same as might be done with the exposed loop of a tendon by sliding same within its sheath. After securing the necessary tension of both ligaments for holding the uterus in a median forward position, the proximal side of each loop is sutured to the abdominal aponeurosis to the extent of about three-fourths of an inch. The traction strand is withdrawn following the fixation of each ligament. The abdominal opening may be closed in accordance with the choice of the surgeon.

The crescentic abdominal incision, including the skin, fat, and aponeurosis, with longitudinal separation of muscle fibre and peritoneum, as suggested by Stimson and extensively practiced in the gynæcological wards of the Jefferson Hospital, offers undoubted advantages in the performance of this operation in uncomplicated cases, especially in subjects with thick abdominal walls. A better view of the anterior pelvic structures is thus obtained and the manipulation of the ligaments facilitated, but its disadvantages in dealing with complicating new growths of large size or inflammatory processes with unyielding adhesions in the posterior pelvic segment are at once apparent to any one contemplating the limited range of exposure afforded by the opening.

Upon the completion of the operation the uterus occupies a well-poised median anterior position, and other conditions being equal, it simulates the normal in its re-

sponsive behavior to the influences of the respiratory act, to varying degrees of intra-abdominal pressure, as well as to the repletion and depletion of rectum and bladder. These changes obtain because the organ itself is in no sense directly fixed by sutures or artificial stays, but is supported by that portion of the round ligaments corresponding in structure with the musculature of the uterus, of which it may in truth be said, they are a continuation and form a part, and possess in no slight degree, therefore, the properties of elasticity and contractility, which, taken in connection with their cord-like form, and with the integrity and function of other uterine supports, are factors of first importance in securing the elastic and mobile equilibrium of the organ referred to, and in maintaining its normal prevailing tendency to a forward inclination in the presence of an ever-changing cycle of physiologic disturbances that tend to its displacement.

The segment of each ligament thus utilized is not alone the more muscular, but likewise the heavier and the stronger portion of its structure in every other respect, so that subsequent overstretching with a recurrence of the displacement is hardly to be feared and has not as yet been observed.

Compensatory evolution and involution of the ligaments during pregnancy and the puerperium are assured, while their extensive and firm union with the unyielding structures of the abdominal wall renders their detachment during the stress of parturition, or from any other cause, among the rarest of possibilities. In the absence of utero-abdominal attachments dystocia, as a result of the operation, can not occur.

The button-hole opening in each broad ligament is necessarily plugged and its edges inverted by the round ligament in its subperitoneal transit toward the abdominal wall, so that in cases uncomplicated by extra-uterine disease requiring additional surgical attention there are no raw surfaces, no preternatural openings through which knuckles of intestine may slip and become strangulated, nor

is there any other lesion left in the pelvis as a direct result of the operation for the formation of unfortunate adhesions and their retinue of possible evils.

The disposal of the slack in the broad ligaments by the necessary traction upon the round ligaments in pulling them through their newly-formed channels at once raises the prolapsed ovaries to a higher plane and a better circulation level.

If the displacement of the uterus is a partial expression of a general disturbance of the statics of the abdominal and pelvic viscera, the operation, if at all indicated, merely becomes one of several expedients to which recourse should be had for improving the patient's condition. In the presence of complicating diseased conditions requiring operative interference, the displacement may, or may not, prove a factor demanding special consideration. Curettement of the uterine cavity if indicated, and requisite plastic work on the cervix and vagina, should, as a matter of course, precede the abdominal operation.

The first operation as described in this paper was performed by Professor Montgomery at St. Joseph's Hospital, January 11, 1904, and he has repeated the procedure in 141 additional cases. I, myself, continued to practice ventro-suspension until convinced of the superiority of the new method, after having assisted in the operation many times and examined patients many months subsequently to determine the time value of the procedure. Within the past eleven months I have done the operation in 26 cases without an unfavorable incident and with the most gratifying results.

Three instances of pregnancy and labor following this procedure have come under the observation of as many competent practitioners of my acquaintance, all of whom reported that nothing unusual was noted in any of them, and that the subsequent behavior of the uterus was in nowise contrary to what was to be anticipated under normal conditions,—*i.e.*, perfect involution with the maintenance of a mobile forward inclination of the organ.